



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

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ACTION MEMORANDUM

Date: JAN 2 1977

Subject: Request for a Ceiling Increase for the Prairie Metals Site, Prairie, Mississippi

From: Warren Dixon *MM, for*
On-Scene Coordinator

To: Donald J. Guinyard, Acting Director
Waste Management Division

I. Issue

A ceiling increase of \$1,071,800 for a new total of \$1,756,800.00 is being requested to continue a removal action at the Prairie Metals Site.

II. Background

The site is located 1 1/4 mile east of Prairie and 1/4 mile north of State Highway 382. The facility is sited on a defunct Army ammunition plant that is currently owned jointly by the City of Aberdeen and the 4th District Supervisors of Monroe County. The facility is surrounded by farmland and is in the approximate center of the water wellfield serving the City of Aberdeen, population, 7,158. Seven wells, five of which are operational, are within one mile of the site. Their depths range from 485 to 565 feet.

The Prairie Metals and Chemical Company (Prairie Metals) leased the property from the City of Aberdeen and engaged in electrolytic production of chromium metal from high-carbon ferrochrome from 1973 until February, 1977. Presently, there are two buildings remaining from the chrome operation. One of the buildings on the northside of the property contains a large mound of high-chromium ferrous ammonium sulfate (FAS), a waste by-product. This waste was stockpiled by Prairie Metals.

A. Incident/Response History

On November 5, 1975, Prairie Metals was notified by the Industrial Wastewater Section of the Mississippi Department of Natural Resources; that laboratory results of samples taken from the plant's effluent contained significant amounts of heavy metals and nitrogen. In January 1976, the State Air and Water Pollution

Control Commission issued an Order directing Prairie Metals to retain an engineer to identify the sources and propose a plan to eliminate the discharge of chromium and nitrogen to Hang Kettle Creek.

Prairie Metals retained Continental Engineering Service (CES) of Aberdeen, Mississippi to address the Order issued by the State. In a January 28, 1976 letter to the State, CES proposed a plan to contain waste onsite indefinitely. The State rejected the proposal as unrealistic and suggested other approaches, such as neutralizing the chromium in the soil. On July 28, 1976 the State issued a National Pollution Discharge Elimination System (NPDES) permit to Prairie Metals. The permit placed limits on the discharge of total chromium, hexavalent chromium, manganese, total suspended solids, temperature, and pH into Hang Kettle Creek. In a letter to the State dated December 3, 1976, CES revealed that most of Prairie Metals 5,000 lb/day production of FAS had, for several months, been used by the Mississippi Agricultural and Forestry Experiment Station at Prairie as a experimental fertilizer. CES also proposed a plan whereby wastewater would be mixed with FAS and the resulting solution sold to area farmers as fertilizer. The state rejected this proposal, finding the calculated concentration of chromium in the resulting solution (4,200 mg/l) to be unacceptable for direct land application.

On February 4, 1977, CES reported to the State that Prairie Metals was scheduled to cease operation on February 12, 1977. The defunct Prairie Metals property was leased in July 1977, to Systems Services and Industrial Corporation (SSIC) of Savannah, Georgia. SSIC attempted to bring the waste water treatment system into compliance with the previously issued permits. After failing to develop an adequate system, SSIC ceased operations in mid-1977, and the production never got beyond the pilot stage of the project. Before ceasing all operations SSIC performed various cleanup operations. These activities included placing contaminated machinery, drums of ferrous ammonium sulfate and other waste materials in onsite settling ponds which were then filled with lime and covered with dirt.

The property is presently owned and managed jointly by the City of Aberdeen and the 4th District of Monroe County. The site is being used on an informal basis by Birmingham Hide and Tallow for storage of drums and curing of pig hides.

The current site condition is unfit for human habitation and any other operation. High levels of chromium from the Prairie Metals electrolytic production can be found throughout the site. An onsite lagoon contains two million gallons of contaminated waste water from the Prairie Metals operations. Sediment contamination in the lagoon ranges from 3,658 ppm to 10,830 ppm of chromium.

This lagoon has not been maintained for the past thirteen years. As a result of the lack of maintenance on this lagoon, the wall on the southeast corner is eroding and could spill waste water in a nearby soybean field and into Hang Kettle Creek if no removal action is taken at this site.

On September 12, 1988, the United States Environmental Protection Agency Region IV, initiated an Emergency Removal Action at the Prairie Metals Site. This action consisted of the removal of chromium contaminated soil from three disposal pits. The soil was stockpiled in the old steam plant building with the existing contaminated stockpiled soil.

The stockpiling of the waste by EPA was a temporary action until a permanent solution for the waste disposal could be determined. On October 23, 1989 EPA decided to solidify the contaminated soil and bury the treated solidified soil on site in below grade disposal cells. The contaminated water in three excavated disposal ponds would be treated on site at the time of the solidification of soil. It was further decided that this work would be performed by a competitive negotiated procurement rather than sealed bids. The competitive negotiated procurement required contractors to submit technical proposals for work to be performed. In general, the contractor was required to:

1. Remove and stockpile the contaminated soil from the steam plant building.
2. Solidify the contaminated soil.
3. Excavate any additional contaminated soil around the steam plant building.
4. Demolish the steam plant building and solidify the contaminated soil underneath the building.

The Prairie Metals site is not on the National Priorities List.

B. Site Conditions

Currently the site is not maintained by the City of Aberdeen nor by Monroe County. The site is surrounded by farmland containing experimental cattle maintained by the Mississippi Agricultural and Forestry Experiment Station in Prairie. Chromium contaminated soil from the Prairie Metals operation was stockpiled in a building on site. The roof on the building has deteriorated and is beginning to fall in on the stockpiled waste. Rain water run-off from the building now flows to a drainage ditch that flows through a nearby soybean field and into Hang Kettle Creek.

Samples of soil from beneath the foundation of the building revealed chromium levels of 1200 ppm which exceed the cleanup level of 400 ppm total chromium established by EPA Region IV. Because of the chromium contamination underneath the foundation of the building, a decision was made to demolish the building and to

excavate the contaminated soil. Currently 5,000 cubic yards of chromium contaminated soil is stockpiled on site with an estimated 600 cubic yards of contaminated soil underneath the foundation of the old steam plant building. In addition to the contaminated soil on site, a lagoon containing two million gallons of contaminated water will be treated on site. The sediment from the lagoon is estimated to be 2000 to 2500 cubic yards.

The contamination of the lagoon and the excavation of the sediment from the lagoon was not addressed in the initial removal action for the site. The ceiling increase for the Prairie Metals site would ensure the removal of both soil and water from the lagoon on site. The increase would also allow for the removal of the estimated 600 cubic yards of contaminated soil from underneath the steam plant building and 2000 to 2500 cubic yards of sediment from the lagoon.

III. Proposed Actions

In order to complete the removal action at the Prairie Metals site a ceiling increase is needed to ensure the removal of chromium contaminated soil and water on site. The removal action would consist of excavating and solidifying the contaminated soil. The solidification of the contaminated soil would be accomplished by blending a 20% mixture of portland cement with the contaminated soil. EPA has performed a treatability study to determine the optimum mixture of cement and waste material. The treatability study indicated that the soil could be adequately treated with the use of cement. The solidified waste monolith will be buried in the excavated lagoon.

A wastewater treatability study was performed for the one million gallons of water at the Prairie Metals Site. The results of the study indicated that the wastewater in the lagoon could be treated to safe drinking water levels (0.050 mg/l) for total chromium and discharged to Hang Kettle Creek. The State of Mississippi Department of Environmental Quality, Industrial NPDES Section has reviewed and approved the results of the wastewater treatability study. A wastewater treatment system has been set up and is presently in operation.

On site treatment and disposal at Prairie Metals would result in a tremendous savings over offsite transportation and disposal of the contaminated soil and wastewater. The sludge from the lagoon would require some type of stabilization prior to shipping for off-site land disposal. The estimated cost for off-site land disposal would exceed the cleanup contractor cost for on-site disposal.

IV. Summary of Costs

<u>Extramural Costs</u>	<u>Current Ceiling</u>	<u>From Ceiling Increase</u>
Cleanup Contractor	\$500,000	\$1,310,000
TAT	\$ 75,000	\$ 90,000
NCLP Analytical Service	\$ 0	\$ 0
ERT	\$ 0	\$ 8,000
Contingency	<u>\$ 85,000</u>	<u>\$ 281,600</u>
TOTAL EXTRAMURAL COSTS	\$660,000	\$1,698,600
 <u>Intramural Costs</u>		
Intramural Direct Costs		
(\$30 x 300 hrs. current)	\$ 10,000	
(\$30 x 800 hrs. Proposed)		\$ 24,000
Intramural Indirect Costs		
(\$54 x 250hrs.current)	\$ 15,000	
(\$54 x 800 hrs. proposed)		<u>\$ 43,200</u>
TOTAL INTRAMURAL COSTS	\$ 25,000	\$ 67,200
TOTAL PROJECT CEILING	\$685,000	\$1,756,800

V. Regional Recommendation

Because of conditions at the Prairie Metals Site meet the National Contingency Plan Section 300.415 criteria for a removal action, I recommend you approve this ceiling increase request. Your approval would increase the total project ceiling from \$685,000 to \$1,756,800 of which \$1,071,800 are for the extramural cleanup contractor costs. You may indicate your approval or disapproval by signing below.

Approve:  Date: 1-14-91

Disapprove: _____ Date: _____